NEW TURRIDAE (GASTROPODA: TOXOGLOSSA) FROM SOUTH FLORIDA AND THE EASTERN GULF OF MEXICO

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ABSTRACT

Three new species, Cerodrillia girardi, Brachycythara barbarae, *and* Granoturris presleyi *are described primarily from collections taken in the eastern Gulf of Mexico, and are compared with other related species.* Daphnella margaretae *is described from south Florida.* Daphnella retifera *Dall,* D. margaretae, *and* D. bartschi *Dall, a closely related species from the tropical eastern Pacific, are assigned to the subgenus* Paradaphne *Laseron, previously known only from the Indo-Pacific.*

Several undescribed turrids were found during examination of mollusks collected in Project Hourglass, a systematic benthic sampling program conducted in the eastern Gulf of Mexico by the Florida Department of Natural Resources Marine Research Laboratory (Lyons, 1968; Joyce & Williams, 1969). New species of *Cerodrillia, Brachycythara,* and *Granoturris* from these collections are described herein. A previously unknown species of *Daphnella (Paradaphne)* from south Florida is also described.

Collections of Recent Turridae of the Academy of Natural Sciences of Philadelphia, Pennsylvania (ANSP), the Museum of Comparative Zoology, Cambridge, Massachusetts (MCZ), and the National Museum of Natural History, Smithsonian Institution, Washington, D. C. (USNM) were examined during this investigation. Additional specimens for study were provided by Mrs. Margaret Kennedy, Delray Beach, Florida, Dr. James H. McLean, Los Angeles County Museum of Natural History (LACM), Los Angeles, California, Mrs. Virginia O. Maes, ANSP, and Mr. and Mrs. Daniel Steger, Tampa, Florida.

Type depositories: Holotypes of all species described are in the collection of the National Museum of Natural History. Paratypes, deposited in various other museums when sufficient material was available, are listed in material of each species examined. DMNH refers to the Delaware Museum of Natural History.

GENUS **Cerodrillia** Bartsch & Rehder, 1939

Cerodrillia girardi new species

FIGS. 1, 2

Description: Shell with about 7½ whorls, small, to about 12.8 mm total length, solid, turreted, subglobose; color uniform waxy amber. Protoconch of 2 smooth, globose whorls passing without interruption into post-nuclear whorls. Post-nuclear whorls 5½, each with 7 or 8 strong, retractively curved, somewhat sigmoid ribs, broadest at rounded periphery. Intercostal spaces broad, smooth except for microscopic incremental lines and extremely faint spiral striation. Base short, marked with 7-9 spiral lines which increase in strength anteriorly. Aperture suboval, broadest near middle. Columella nearly straight; inner lip moderately wide, distinct. Outer lip thin, backed by a thickened varix, irregularly curved, with a shallow but distinct stromboid notch. Sinus deep, broad, bordered posteriorly by a thick callus. Canal very short, broad, shallow.

Material examined: Holotype: USNM 707001. Length 8.8 mm, width 3.8 mm. Off Egmont Key, Florida, Hourglass station D, 27°37'N, 83°58'W, 55 m; August 11, 1966. --Single adult paratypes, all from station D, deposited at ANSP, LACM, MCZ, USNM, American Museum of Natural History, New York (AMNH), Delaware Museum of Natural History, Greenville, Delaware (DMNH) and Florida Depart-

[1] Contribution no. 205

ment of Natural Resources Marine Research Laboratory, St. Petersburg, Florida (FSBC I).

Remarks: Cerodrillia girardi sp. nov. is more globose than *C. clappi* Bartsch and Rehder, *C. perryae* Bartsch and Rehder, or *C. thea* (Dall), though the nucleus resembles that of *C. thea.* In general outline it is nearest *C. bealiana* Schwengel & McGinty, with which it is often collected, but the latter is a smaller species with a much smaller and more pointed nucleus.

Cerodrillia girardi was never collected in large numbers during Project Hourglass, but low numbers were taken frequently at station D. It was collected only occasionally at stations E, L, and M (55 and 73 m stations). Most specimens other than type material were juveniles or dead shells in poor condition. There are specimens in the Steger collection from off the lower Florida Keys in 49-55 m.

The species is named for Capt. Earl Girard, master of the R/V *Hernan Cortez* during the Hourglass cruises.

GENUS *Brachycythara* Woodring, 1928

Brachycythara barbarae new species

FIGS. 3, 4

Description: Shell with about 6 whorls, small, to about 3.5 mm total length, biconic, translucent, with little or no spiral sculpture and strong axial ribs. Protoconch with about 3 whorls, the tip distinctly defined, not immersed in the next whorl; first two nuclear whorls smooth, rapidly enlarging, somewhat compressed axially; third whorl initially with fine, curved, closely-spaced axial riblets which increase in strength as they progress downward. Post-nuclear whorls generally smooth, but faint spiral striae sometimes present; axial ribs strong, sinuose, sharply angled at the periphery, giving the whorls an angular appearance; 8-9 such ribs on the body whorl. A faint brown spiral band between suture and periphery of spiral whorls; as many as six such bands below periphery on body whorl, final band on the base most broad. Eight or nine unornamented spiral threads on base. Aperture narrow, about 40 per cent total length of shell; outer lip thickened, rounded at shoulder; sinus adjoining suture wide, rounded, very shallow; parietal callus smooth, fairly broad; columella short, truncate.

Material examined: Holotype: USNM 707003. Length 3.4 mm, width 1.6 mm. Off Egmont Key, Florida, Hourglass station D, 27°37'N, 83°58'W, 55 m; February 28, 1967. --Single adult paratypes, all from station D, deposited at AMNH, ANSP, DMNH, FSBC, LACM, MCZ, USNM, and the Steger collection.

Remarks: Brachycythara biconica (C. B. Adams), the only other Recent western Atlantic species near *B. barbarae* sp. nov., has distinctly beaded spiral cords on the post-nuclear whorls, giving the surface a frosted appearance which immediately separates it from *B. barbarae.* In addition, *B. biconica* possesses more numerous axial ribs (10-12 on body whorl) which are rounded, not angled, at the periphery, and a relatively longer aperture (about 50 per cent total length of shell). The columella of *B. biconica* is straight. The tip of the apex is immersed in the next whorl, giving the nucleus a blunter appearance than that of *B. barbarae.* The lectotype of *B. biconica alba* (C. B. Adams) (Clench and Turner, 1950; pl. 32, fig. 1) has the frosted sculpture of *B. biconica* and is apparently an unusual form of that species.

Bathymetric preferences for *B. biconica* and *B. barbarae* are evident. In Hourglass collections, *B. biconica* was common at 18 and 37 m stations but seldom occurred at greater depths; it occurs in depths as shallow as 1 m in the Florida Keys. *Brachycythara barbarae* was common at 55 and 73 m Hourglass stations, but was taken only occasionally at the northern 37 m station (C), and was never taken at the comparable southern station (K). There is one large lot in the Steger collection taken southwest of Sombrero Light, Monroe County, Florida, in 55 m. I have not seen *B. barbarae* from shallower than 37 m.

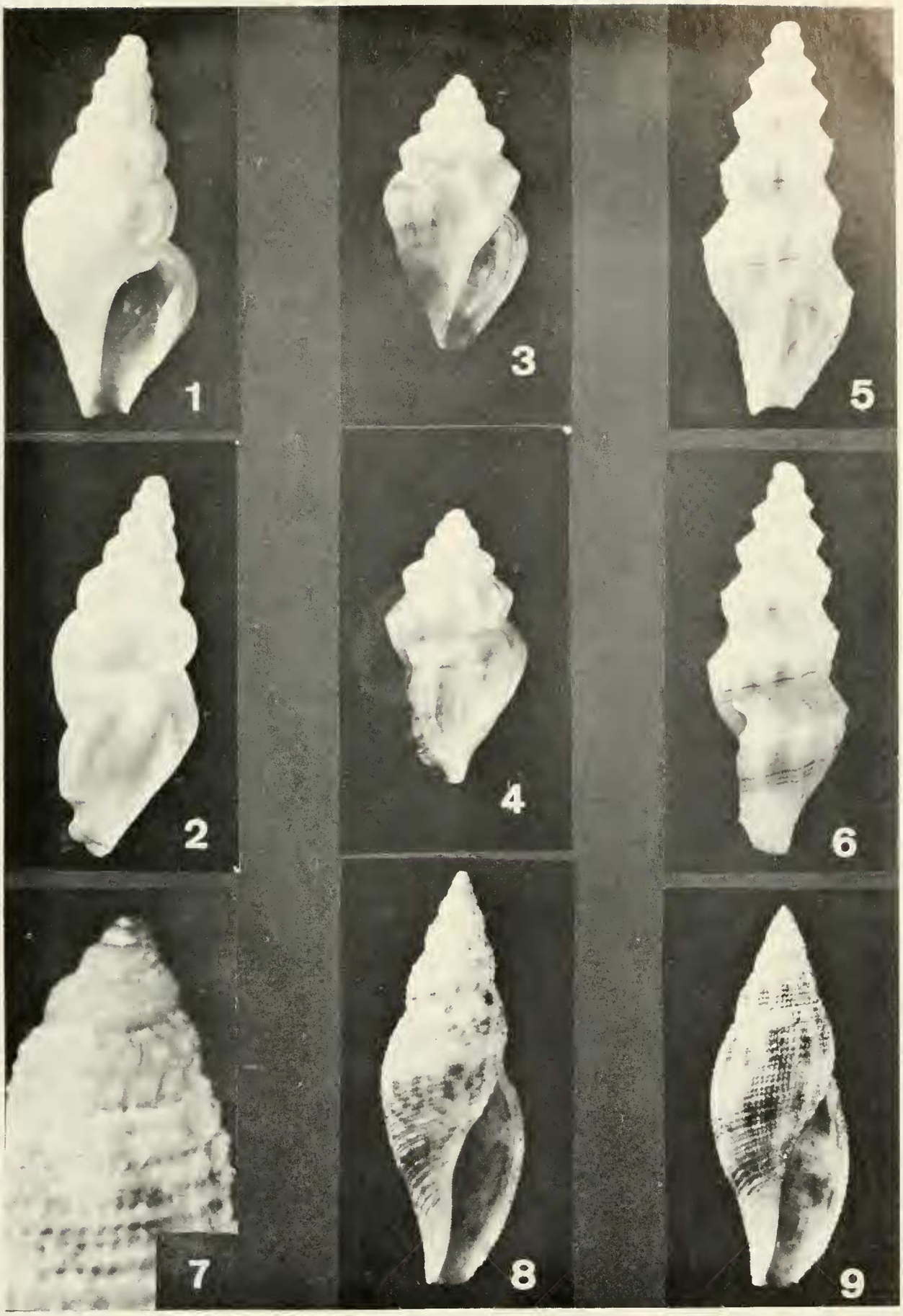
The species is named for Mrs. Barbara Steger in appreciation of her gracious hospitality during my examination of the Steger collection.

GENUS *Granoturris* Fargo, 1953

Granoturris presleyi new species

FIGS. 5, 6

Description: Shell with about 7 whorls, small, to about 4.7 mm total length, slender, turreted. Protoconch flesh-colored, prominent, resembling *Miraclathurella*, of about 1½ smooth whorls, tip immersed in following whorl. First ½ post-nuclear whorl strongly keeled at periphery as in *Cryoturris*, with about 9 axial riblets. Subsequent whorls with 11-12 strong axial ribs, sharply angled at submedian periphery. A spiral cord connecting peripheral angles, another somewhat weaker cord midway between periphery and anterior suture. Pre- and post-peripheral sculpture of closely-spaced, frosted



FIGS. 1, 2 Cerodrillia girardi *Lyons, Holotype, 8.8 mm, USNM 707001;*
FIGS. 3, 4 Brachycythara barbarae *Lyons, Holotype, 3.4 mm, USNM 707003;*
FIGS. 5, 6 Granoturris presleyi *Lyons, Holotype, 4.7 mm, USNM 707005;*
FIGS. 7, 9 Daphnella (Paradaphne) bartschi *Dall, 10.4 mm, LACM collection;*
FIG. 8 Daphnella (Paradaphne) margaretae *Lyons, Holotype, 10.7 mm, USNM 707006.*

spiral threads. Aperture elongate, subovate. Sinus subsutural, a broad, shallow depression near shoulder. Outer lip thin, unvariced, angled at shoulder. Anterior canal short, moderately broad and deep. Post-nuclear whorls white, with about 5 fine, brown spiral lines on post-peripheral portion, a more prominent, darker brown line immediately posterior to suture; 3 dark brown lines near middle of body whorl, 5 weaker brown lines toward anterior canal.

Material examined: Holotype: USNM 707005. Length 4.7 mm, width 1.8 mm. Off Egmont Key, Florida, Hourglass station B, 27°37'N, 83°07'W, 18 m; November 20, 1967. --Three paratypes, all from station B: 1 at ANSP, 2 at FSBC.

Remarks: Granoturris presleyi sp. nov. is the first known Recent species from the western Atlantic; *G. padolina* Fargo, from the North St. Petersburg Pliocene, differs from the Recent species by possession of fewer axial ribs on whorls, and by its larger size. The shoulders of *G. padolina* are normally convex, according to Fargo; on *G. presleyi*, the shoulders are always quite flat.

The species is named for Mr. Robert F. Presley, ship's biologist of the R/V *Hernan Cortez* during the Hourglass cruises.

GENUS *Daphnella* Hinds, 1844

SUBGENUS Paradaphne Laseron, 1954

Description: Shell small, to about 11.3 mm total length, moderately thin, fusiform. Nucleus of 4-6 rounded, diagonally cancellate whorls, protractive threads of cancellation somewhat stronger than retractives on last whorl. Intersection of nuclear and post-nuclear sculpture not sharply defined, protractive nuclear axials overlying for a small distance post-nuclear spirals. Spire and body whorl with many spiral lines crossed by axial threads, beaded at intersections, with or without fine spiral threads in interspaces. Aperture elongate-ovate, widest near middle. Sutural sinus moderately deep, reversed L-shaped, sloping anteriorly. Outer lip simple, curved, tapered anteriorly, slightly thickened within; a very weak notch at intersection with short, shallow, moderately wide anterior canal.

Remarks: Powell (1966) dismissed Laseron's *Paradaphne* for lack of characters of differentiation from *Daphnella*. It is evident, however, that there exists a circumtropical group of species, differing markedly from *Daphnella* in nuclear and post-nuclear sculpture. *Daphnella botanica* Hedley, 1918, the type species of *Paradaphne*, belongs to this group, though it is one of the species nearest in form to *Daphnella* s. s.

Daphnella lymneiformis, the type species of *Daphnella*, and closely related species have a smaller, more slender protoconch of 2½-3 whorls, with little variation in the strength of diagonal cancellation of the last whorl. Intersection of nuclear and post-nuclear sculpture is abrupt, without the overlap zone of *Paradaphne*. Size, sculpture, and number of whorls of the protoconch of *Paradaphne* resemble those of *Metuonella* Sorgenfrei, 1958, *Cryptodaphne* Powell, 1942, and *Maoridaphne* Powell, 1942, but these three differ from *Paradaphne* by variously possessing strong axial ribs, markedly different apertures and sinuses, or both. In addition, the outer lip of adult *Daphnella* s. s. is flared anteriorly, not tapered and constricted as in *Paradaphne*. The aperture and outer lip of *Paradaphne* closely resemble those of immature *Daphnella*, but the inner thickening of some specimens indicates that they are mature.

Eudaphne Bartsch, 1931 (*non* Reuss, 1922) was proposed to contain *Daphnella allemani* (Bartsch, 1931). The name was later changed by Bartsch (1933) to *Eudaphnella*. Keen (1958) suggested that perhaps *Eudaphne* should be used in a subgeneric sense for *D. allemani* and *D. bartschi* Dall, 1919. However, *D. allemani* has the wide aperture, flared outer lip rounded at the sutural sinus, and extremely short canal of typical *Daphnella* and is so similar in all other respects that subgeneric separation seems unwarranted, as noted by Powell (1966). *Daphnella bartschi* is definitely assignable to *Paradaphne*, as are *D. retifera* Dall, 1889, and a new species herein described.

Daphnella (Paradaphne) margaretae new species

FIG. 8

Description: Shell with about 8 whorls, small, to 10.7 mm total length. Nucleus of about 5 rounded, diagonally cancellate whorls, brown except fifth, which has two spiral rows of large, round, white spots best seen on wet specimens. Spire and body whorl sculptured of fairly strong spiral lines crossed by weaker axial threads, strongly beaded at intersections; spiral threads within interspaces nearly obsolete. Aperture slender, elongate; outer lip simple, thickened within; sinus moderately deep, reversed L-shaped. Siphonal canal broad, shallow, brief, but longer than that of most daphnellids. Color cream, with rich brown maculations. Three rows of large, spot-like brown maculations on body whorl at

periphery, middle and posterior portion of base.

Material examined: Holotype: USNM 707006. Length 10.7 mm, width 3.8 mm. South of Dry Tortugas, Florida, 24°24'N, 82°58'W, 76-85 m; April 27, 1967; R/V *Hernan Cortez.* --Paratypes: ANSP 324021. Length 5.4 mm, width 2.2 mm. On *Spondylus* collected in 37-55 m off Palm Beach County, Florida, 1970. --FSBC I 7896. Length 4.4 mm, width 2.0 mm. South of Sand Key, Monroe County, Florida, 35-36 m, August 2, 1971; R/V *Hernan Cortez.*

Remarks: Radwin (1969: p.233) proposed the term "cognates" to replace "analogues", as the meaning of the former more clearly denotes "related through the same origin" in the immediate biological sense. *Daphnella bartschi* from the eastern Pacific and *D. margaretae* sp. nov. are obvious cognates and have probably evolved since emergence of the Central American isthmus. *D. margaretae* differs from *D. bartschi* (Figs. 7, 9) by possessing stronger spiral lines crossed by weaker axial threads on the spire and body whorl. The overall appearance of *D. bartschi* is of even cancellation, whereas on *D. margaretae* spiral sculpture is the dominant feature. Many fine spiral threads in interspaces between post-nuclear spiral and axial sculpture are clearly defined in *D. bartschi,* but are nearly obsolete in *D. margaretae.* Overall, the shell of *D. margaretae* is more slender than that of *D. bartschi.* The double row of large white spots on the last nuclear whorl and maculations of spire and body whorl are identical on both.

Daphnella retifera Dall, 1889, has one more nuclear whorl and a more globose, thinner shell than either of the preceding species. Nuclear size, sculpture of nuclear and post-nuclear whorls, and shape of the aperture and outer lip indicate the relationship of this species to the previous two. Interspaces between axial and spiral sculpture are smooth. Color of the nucleus is brown; post-nuclear whorls are white, with scattered yellow maculations.

Daphnella (Paradaphne) margaretae is named for Mrs. Margaret Kennedy, Delray Beach, Florida, who provided one of the paratypes and whose articles on western Atlantic Turridae in *Seafari,* the bulletin of the Palm Beach County Shell Club, have stimulated much interest in this group.

ACKNOWLEDGEMENTS

I thank Dr. James H. McLean and Mrs. Virginia Maes for critically reading the manuscript and providing additional information. They, Mrs. Margaret Kennedy and Mr. and Mrs. Daniel Steger kindly loaned specimens. The many persons who gave assistance during inspection of collections at the before-mentioned museums are gratefully acknowledged. Special thanks are extended to Mrs. Sally Kaicher who produced the photographs.

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